

#25

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15. A recombinant kinase characterized by:

- a) remaining stable during the synthesis of nucleoside monophosphate in the absence of stabilizing SH reagent and stabilizing proteins,
- b) accepting all natural deoxynucleosides,
- c) being obtainable from cells of a nonvertebrate organism,
- d) being encoded for by a DNA sequence which can hybridize to one or more primers selected from the group consisting of SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7 and SEQ ID NO:8, and
- e) further characterized in that the recombinant kinase is obtainable by the following steps:
 - 1) isolation of the coding sequence of the recombinant kinase,
 - 2) cloning of the structure gene in an expression vector with an inducible promotor for E. coli,
 - 3) transformation of the expression vectors in an E. coli host strain,
 - 4) expression of the kinase in E. coli by induction,
 - 5) gathering of the cells by centrifugation and resuspending the cells in a buffer containing 20 mM potassium phosphate, 5 mM MgCl₂, 1 mM DTT, 10% glycerin, 1% Triton X100 and 0.1 mM phenylsulfonylfluorides.

16. The recombinant kinase of claim 15 wherein said nonvertebrate organism is an insect.

17. The recombinant kinase of claim 15 further characterized by having a specific activity of at least 20 U/mg ($1\text{U} = 1\mu\text{mol}/\text{min}$) for all natural deoxynucleosides.
18. The recombinant kinase of claim 15 further characterized by having a specificity constant of $>10,000\text{ M}^{-1}\text{s}^{-1}$ for all natural deoxynucleosides.
19. The recombinant kinase of claim 15 further characterized by having a half-life of ≥ 50 h in Tris buffer with 5 mM MgCl_2 and of ≥ 25 h in water at 37°C .
20. The recombinant kinase of claim 15 further characterized by having a temperature optimum between 40° and 60°C .
21. The recombinant kinase of claim 16 wherein said insect is *Drosophila melanogaster*.
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54. A recombinant kinase characterized by:
- a) remaining stable during the synthesis of nucleoside monophosphate in the absence of stabilizing SH reagent and stabilizing proteins,
 - b) accepting all natural deoxynucleosides, and
 - c) being isolatable from a host cell transformed with DNA containing the *Drosophila melanogaster* gene coding for the native kinase.

55. The recombinant kinase of claim 54 further characterized by having a specific activity of at least 20 U/mg ($1\text{U} = 1\mu\text{mol}/\text{min}$) for all natural deoxynucleosides.
56. The recombinant kinase of claim 15 further characterized by having a specificity constant of $>10,000\text{ M}^{-1}\text{s}^{-1}$ for all natural deoxynucleosides.
57. The recombinant kinase of claim 15 further characterized by having a half-life of ≥ 50 h in Tris buffer with 5 mM MgCl_2 and of ≥ 25 h in water at 37°C .
58. The recombinant kinase of claim 15 further characterized by having a temperature optimum between 40° and 60°C .
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